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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,066	10/20/2003	Andrew Harvey Barr	100202103-1	6663

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EXAMINER	
JONES, STEPHEN E	

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/690,066	BARR, ANDREW HARVEY	
	Examiner	Art Unit	
	Stephen E. Jones	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-31* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/20/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claim 24 bridging conductor that couples across the first and second openings must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3-6, 10-11, 14-16, 30, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Wiggenhorn.

Wiggenhorn (Figs. 2-3) teaches a stripline including; a dielectric board (15) (i.e. a circuit board) having a signal conductor (13) (i.e. a signal trace) inside (Claims 6, 14, 15-16); a part of the stripline is a conductive plane (11) that has a continuous channel opening (17) and the size and position affect the impedance in the same manner as the present invention (e.g. see Col. 2, lines 55-60) (and especially since it the same structure as the presently claimed structure) (Claims 1, 11, 30, and 31); the slot and signal conductor are centered to each other (e.g. see Fig. 2) (Claim 3); and the channel opening can be considered over or under the signal conductor based on one's perspective/orientation (Claims 4-5) and is parallel to the conductor (Claim 10).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggenhorn in view of Wright et al.

Wiggenhorn teaches a stripline as described above. However, Wiggenhorn does not explicitly teach that the width of the opening is greater than the width of the signal line.

Wright provides the general teaching that striplines having slots in the outer reference conductor arranged as a chosen size provides controlling the impedance (e.g. see Col. 6, lines 34-44) and including that the slots can be wider than the signal conductor (e.g. see Figs. 1, 3, 4, and 5).

It would have been considered obvious to one of ordinary skill in the art to have made the slot wider than the signal line in the Wiggenhorn structure, because it would have been considered a mere optimization of the impedance characteristics of the device based on the pre-selected/desired impedance control characteristics (such as suggested by Wright).

7. Claims 7-9, 25, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggenhorn in view of Applicant's admitted prior art Fig. 1.

Wiggenhorn teaches a stripline as described above (Claim 8-9, 29). However, Wiggenhorn does not explicitly teach that the device is used for a high frequency signal (Claims 7, 25, 28).

The applicant's admitted prior art teaches that stripline/microstrip is used for high frequency transmission lines (as is well-known in the art).

It would have been considered obvious to one of ordinary skill to have used the Wiggenhorn signal device in a high frequency setting, because it would have been a well-known application for the stripline device such as suggested by applicant's admitted prior art.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggenhorn in view of Trinh.

Wiggenhorn teaches a stripline as described above. However, Wiggenhorn does not explicitly teach a bridging conductor that couples the two portions of the outer conductive plane across the slot.

Trinh provides the general teaching of connecting portions of a reference plane to each other with a wire across a gap.

It would have been considered obvious to one of ordinary skill in the art to have connected the Wiggenhorn two external conductor portions which are separated by the slot with a wire such as suggested by Trinh, because it would have provided the advantageous benefit of a common reference potential and uniform frequency ground/reference potential such as suggested by Trinh (e.g. see Col. 8, lines 50-52).

9. Claims 17-20, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beyer et al. in view of Wright et al.

Beyer (e.g. Figs 4 and 6) teaches a circuit board including: a stripline (e.g. 13) and a conductive plane (14) has two openings; no portion of the conductor is beneath the opening (Claim 18); the portion of the conductive plane between the first opening and the second opening can be considered a return conductor in the same manner as the present invention, especially since it is the same structure as the claimed structure (Claim 19) and the impedance of the signal path is inherently a function of the return-signal conductor path, especially since it the same structure as the claimed structure (Claim 23); a longitudinal centerline of the conductor (23 in Fig. 6) coincides with the longitudinal centerline of the signal conductor (Claim 20).

However, Beyer does not explicitly teach that the dimensions (and width) of the openings and respective proximity of the openings to the signal conductor are selected to affect the impedance of the conductor (Claims 17, 22).

Wright provides the general teaching that striplines having slots in the outer conductor arranged as a chosen size provides controlling the impedance (e.g. see Col. 6, lines 34-44). Also it is a fundamental characteristic of a stripline that the distance between the reference conductor and the signal line affects the impedance of the line.

It would have been considered obvious to one of ordinary skill in the art to have selected the Beyer opening dimensions as a chosen size/width (and distance as is well-known) such as suggested by Wright, because it would have been a mere optimization providing the advantageous benefit of the impedance characteristics of the device

based on the pre-selected/desired impedance control characteristics (such as suggested by Wright).

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beyer et al. and Wright et al. as applied to claims 17, 19, and 20 above, and further in view of Applicant's admitted prior art Fig. 1.

Beyer and Wright teach a circuit board as described above. However, the combination does not explicitly teach that the circuit board is for high frequency.

The applicant's admitted prior art teaches that stripline/microstrip is used for high frequency transmission lines (as is well-known in the art).

It would have been considered obvious to one of ordinary skill to have used the Beyer/Wright circuit device in a high frequency setting, because it would have been a well-known application for the stripline transmission line such as suggested by applicant's admitted prior art.

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beyer et al. and Wright et al. as applied to claim 17 above, and further in view of Trinh.

Beyer and Wright teach a circuit board as described above.

However, Beyer/Wright does not explicitly teach a bridging conductor that couples the two portions of the outer conductive plane across the slot openings.

Trinh provides the general teaching of connecting portions of an outer conductor/reference plane to each other with a wire across a gap.

It would have been considered obvious to one of ordinary skill in the art to have connected the Beyer/Wright two external conductor portions which are separated by the slot with a wire such as suggested by Trinh, because it would have provided the advantageous benefit of a common reference potential and uniform frequency ground/reference potential such as suggested by Trinh (e.g. see Col. 8, lines 50-52).

12. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beyer in view of Applicant's admitted prior art Fig. 1 and Wright et al.

Beyer teaches a circuit board as described above (including Claim 27). However, Beyer does not explicitly teach that the circuit is for high frequency or that the dimensions of the openings and respective proximity of the openings to the signal conductor are selected to affect the impedance of the conductor (Claim 26).

Wright provides the general teaching that striplines having slots in the outer conductor arranged as a chosen size provides controlling the impedance (e.g. see Col. 6, lines 34-44). Also it is a fundamental characteristic of a stripline that the distance between the reference conductor and the signal line affects the impedance of the line.

The applicant's admitted prior art teaches that stripline/microstrip is used for high frequency transmission lines (as is well-known in the art).

It would have been considered obvious to one of ordinary skill to have used the Beyer circuit device in a high frequency setting, because it would have been a well-

known application for the stripline transmission line such as suggested by applicant's admitted prior art.

Also, It would have been considered obvious to one of ordinary skill in the art to have selected the Beyer opening dimensions as a chosen size/width (and distance as is well-known) such as suggested by Wright, because it would have been a mere optimization providing the advantageous benefit of the impedance characteristics of the device based on the pre-selected/desired impedance control characteristics (such as suggested by Wright).

Allowable Subject Matter

13. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bischof teaches a microwave line structure.

Nishikawa et al. teaches a multilayer transmission line.

Matsui (Fig. 10) teaches a transmission line having a slot.

Compton teaches a staggered ground plane transmission line.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen E. Jones whose telephone number is 571-272-1762. The examiner can normally be reached on Monday through Friday from 8 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SEJ